

### **Remarks**

Applicant respectfully requests reconsideration in view of the foregoing amendments and the following remarks. Claims 28, 30-42 and 44-49 are presently pending. This response amends claim 47 and adds new claim 50.

Claims 47 and 48 stand rejected under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the written description requirement. Claim 47 stands rejected under 35 U.S.C. § 102 over U.S. Pat. No. 5,123,024 to Dowd et al. (Dowd). Claims 28, 30-31, 33-38, 40, 42, 44-45 and 49 stand rejected under 35 U.S.C. § 103(a) over U.S. Pat. No. 4,409,500 to Welland (Welland) in view of U.S. Pat. No. 5,444,579 to Klein et al. (Klein). From the remarks of the Action at page 4, beginning at line 12, Applicant assumes that the Examiner intended also to reject claim 41 over Welland and Klein. However, there is no statutory basis set forth in the Office action for any rejection of claim 41. Therefore, if the claim is not allowable, a non-final action setting forth the statutory basis for rejecting the claim would be required. Claims 32, 39 and 46 stand rejected under 35 U.S.C. § 103(a) over Welland in view of Klein and U.S. Pat. No. 6,344,762 to Prentice (Prentice). Claim 48 stands rejected under 35 U.S.C. § 103(a) over Dowd in view of Prentice. Applicant respectfully traverses these rejections.

### ***Rejections under 35 U.S.C. § 112***

The Action at page 2 states that “the specification has failed to describe providing an AC output and a DC output from a third terminal of the transistor device to a current dependent load AC as called for in claim 47.” Applicant respectfully disagrees with the Action’s interpretation of the specification and points out that the original specification describes outputs connected to current-dependent loads. For example,

Output circuitry 226 includes a current source circuit 280 and load output VOUT (also designated by reference numeral 290). The output from the collector of transistor device 230 is provided to current source circuitry 280, which in turn, provides output VOUT to an electrical load (not shown). In one form, VOUT drives a laser device of a *current-dependent* variety, such as a quantum cascade type.

See page 11, lines 5-9 (emphasis added), and Fig. 3. Further examples of outputs connected to loads are output circuitry 26 of Fig. 1, output circuitry 126 of Fig. 2 and output circuitry 326 of Fig. 4. The application also states, referring to Fig. 5:

Signals VACOUT and/or VDCOUT can be further utilized by communications circuitry, sensing circuitry or such different applications as would occur to those skilled in the art.

See page 14, lines 12-14. The specification thus teaches that AC and DC outputs may be connected to loads. Example of such loads are given in the passage from page 11, cited above, including to a current-dependent load.

For at least these reasons, the specification describes the subject matter of claims 47 and 48. The rejection should be withdrawn, and such action is respectfully requested. However, Applicant has broadened the claim by using the term "load."

***Rejections under 35 U.S.C. § 102 over Dowd***

Amended claim 47 is directed toward:

A method, comprising:  
operating a transistor device with first, second and third terminals in a common base or common gate configuration;  
coupling two or more input signal pathways to a first terminal of the transistor device;  
coupling a lowpass filter to a second or base terminal of the transistor device; and  
providing an AC output and a DC output from a third terminal of the transistor device; and  
providing an AC output and a DC output from a third terminal of the transistor device *for connection to a load, the AC output being a separate output from the DC output.*

The original specification contains support for the amendment at, for example, page 14, lines 4-12, and Fig. 5.

Dowd does not teach or suggest such a method. For example, Dowd is silent as to “providing an AC output and a DC output from a third terminal of the transistor device for connection to a load, the AC output being a separate output from the DC output.” Instead, Fig. 1 of Dowd shows a current  $I_O$  at node 21 flowing from a terminal of transistor 14, but does not teach separate AC and DC outputs. For at least these reasons, claim 47 is allowable over Dowd. The rejection should be withdrawn, and such action is respectfully requested.

***Rejections under 35 U.S.C. § 103(a) over Welland in view of Klein***

***Independent Claim 28***

Claim 28 is directed toward:

A method, comprising:  
operating a transistor device in a common base or common gate configuration;  
coupling two or more input signal pathways to a first terminal of the transistor device, wherein one of the input signal pathways is from a current source with a lowpass filter, the filter comprising active and passive components . . . and  
providing an output from a second terminal of the transistor device to a current-dependent load.

Welland does not teach or suggest such a method. As the Action notes at page 4, line 1, Welland does not show a low pass filter having active and passive components. The Action points to Klein’s Fig. 6 as teaching a low pass filter. Klein states:

The resistor R2 then works with the capacitor C2, connected between the node 106 and voltage terminal  $V_{DD}$ , to provide a low pass filter of any undesired noise in the voltage level at node 108. . . .

See col. 6, lines 32-37. However, resistors and capacitors are *passive*, not active, components, and thus Klein’s Fig. 6 does not teach a filter comprising active and passive components.

Additionally, neither Welland nor Klein’s Fig. 6 teach “coupling two or more input signal pathways *to a first terminal of the transistor device*, wherein one of the input signal pathways is *from* a current source with a lowpass filter.” Fig. 6 shows a current source 101 connected to

connected to transistor M11 at nodes 103 and 108, and resistor R2 connected to M11 at node 108. Therefore, Fig. 6 of Klein does not show an input signal *from* a current source with a lowpass filter, as signals from current source 101 do not pass through any filter before reaching transistor M11.

Assuming for purposes of argument only that one would combine Welland and Klein, and any such combination is traversed, the logical combination is to place the filter of Klein at the location taught by Klein, which is not with an input signal pathway from a current source as required by claim 28.

Furthermore, there is also no motivation to combine Welland and Klein. The Action at page 4, line 4 states (emphasis added):

It would have been obvious to a person skilled in the art at the time the invention was made to include a low pass filter in between the current input signal and the emitter of the transistor device of Welland *for the purpose of filtering out noise*. . . .

However, Welland makes no mention of “noise” or “filtering” and provides no suggestion that noise may be an issue in the circuit of Welland. Adding a filter to the circuit of Welland would require additional parts, effort and expense, and would also provide no benefit apparent to one of ordinary skill in the art. For at least these reasons, there is no motivation to combine Welland and Klein, and it is therefore improper to base a rejection on such a combination.

For at least these reasons, claim 28 is allowable over a Welland-Klein combination. The rejection should be withdrawn, and such action is respectfully requested.

*Dependent Claims 30, 31, 33, 34 and 49*

Claims 30, 31, 33, 34 and 49 depend from claim 28 and are allowable over Welland and Klein for at least the reasons stated above in support of their parent claim. Each claim is also independently patentable for the unique combination of features recited therein.

For example, claim 33 recites:

The method of claim 28, wherein the *first terminal corresponds to an emitter*, the second terminal corresponds to a collector and the transistor device further includes a base, and which further includes coupling a different transistor device to the base, the different transistor device including a ground-coupled emitter.

Parent claim 28 recites “coupling two or more input signal pathways *to a first terminal* [i.e., the emitter, for claim 33] of the transistor device, wherein one of the input signal pathways is *from a current source with a lowpass filter. . .*” However, Klein’s Fig. 6 shows resistor R2 connected to the *gate* of transistor M11, not the emitter. As explained above with respect to claim 28, Welland does not teach a filter, and the resistor-gate configuration of Klein’s Fig. 6 teaches away from “coupling two or more input signal pathways to [an emitter] of the transistor device, wherein one of the input signal pathways is from a current source with a lowpass filter.” The rejection should be withdrawn, and such action is respectfully requested.

*Independent Claim 35*

Claim 35 is directed toward:

An apparatus, comprising:  
a transistor device including an emitter, a base, and a collector, said transistor device being in a common base configuration arranged to maintain said emitter at a predefined voltage . . .  
a number of input signal pathways coupled to said emitter; and  
a current source coupled to said collector, said current source comprising at least one active component and being responsive to a signal input with one of said input signal pathways.

Welland does not teach or suggest such an apparatus. For example, Welland does not teach “a current source coupled to said collector, said current source *comprising at least one active component and being responsive to a signal input with one of said input signal pathways.*”

(The Action at page 4, line 1, suggests that claim 35 is directed toward a lowpass filter.

Applicant respectfully points out that this is incorrect.) Klein shows a current source circuit in Fig. 9, but the only “input” to that circuit is a reference voltage  $V_{REF4}$ . Thus, Klein also does not describe a “current source . . . responsive to a signal input with one of the said input signal pathways [coupled to said emitter].” For at least these reasons, claim 35 is allowable over Welland and Klein, singularly and in combination.

#### *Dependent Claims 36-38, 40 and 41*

Claims 36-38, 40 and 41 depend from claim 35 and are allowable over Welland and Klein for at least the reasons stated above in support of their parent claim. Each claim is also independently patentable for the unique combination of features recited therein. The rejection should be withdrawn, and such action is respectfully requested.

#### *Independent Claim 42*

Claim 42 is directed toward:

A method, comprising:  
operating a transistor device in a common base or common gate configuration to provide a virtual ground at a first terminal of the transistor device, wherein the virtual ground is provided by a servo device terminal, and wherein no reactive components are positioned between the first terminal of the transistor device and the servo device terminal;  
providing a number of input signal pathways coupled to the first terminal of the transistor device, wherein one of the input signal pathways is from a current source with a lowpass filter, the filter comprising active and passive components. . . .

Welland and Klein do not teach or suggest such an apparatus. For example, as similarly noted above with respect to independent claim 28, Welland, and Klein's Fig. 6, do not teach a low pass filter having active and passive components. The cited references also do not teach "providing a number of input signal pathways coupled to *the first terminal of the transistor device*, wherein one of the input signal pathways is *from* a current source with a lowpass filter." Additionally, there is no motivation to combine Welland and Klein. For at least these reasons, claim 42 is allowable over Welland and Klein. The rejection should be withdrawn, and such action is respectfully requested.

*Dependent Claims 44-45*

Claims 44-45 depend from claim 42 and are allowable over Welland and Klein for at least the reasons stated above in support of their parent claim. Each claim is also independently patentable for the unique combination of features recited therein. The rejection should be withdrawn, and such action is respectfully requested.

***Rejections under 35 U.S.C. § 103(a) over Welland in view of Klein and Prentice***

Claim 32 depends from claim 28, claim 39 depends from claim 35, and claim 46 depends from claim 42. As explained above, each of these parent claims is allowable over a Welland-Klein combination. Prentice does not remedy the shortcomings of Welland or Klein with respect to any of these three parent claims, and therefore dependent claims 32, 39 and 46 are allowable over a Welland-Klein-Prentice combination. Each claim is also independently patentable for the unique combination of features recited therein. The rejection should be withdrawn, and such action is respectfully requested.

***Rejection under 35 U.S.C. § 103(a) over Dowd in view of Prentice***

Claim 48 depends from claim 47 and is allowable over Dowd for at least the reasons stated above in support of the parent claim. Prentice does not remedy the shortcomings of Dowd, and claim 48 is therefore allowable over a Dowd-Prentice combination. Claim 48 is also independently patentable for the unique combination of features recited therein. The rejection should be withdrawn, and such action is respectfully requested.

***New Claim***

New claim 50 depends from independent claim 47.

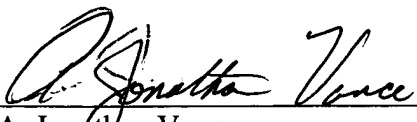
**Conclusion**

For the reasons stated above, all claims are believed to be in condition for allowance. All rejections should be withdrawn, and such action is respectfully requested. If any further issues remain concerning this application, it is requested that the Examiner call the undersigned attorney.

Respectfully submitted,

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